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Did You Get a Good Education?

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The Warm Hearth Village retirement community has a writer's group that sometimes selects a topic for everyone to consider, hence the title of this commentary. Education provided me with three important guides.

1. The credentials necessary to be admitted to my chosen path by the "gatekeepers."
2. A wide selection of opportunities from which one could select a focus for a career path that, with luck, would last a lifetime. The path would involve an intellectual journey so that one's activities would vary while traveling the path.
3. Albert Einstein remarked that "one cause of his attraction to science was to be shielded from everyday existence, from its unbearable cruelty and inconsolable emptiness, from the prison of one's constantly changing whims" (Hargittai, 2006, p. 315).

Since education provided me with all of the above, my response to the question is YES.

Item 1: An AB from Swarthmore College in 1947, an MS (1949), and a PhD (1953) provided me with the credentials so essential for entry into a scientific research career, but my advisor at Swarthmore College, Professor Robert Enders, introduced me to the art of asking the "right" questions, which was continued by the chair of both my MS and PhD committees, Professor David Wenrich at the University of Pennsylvania. It was Professor Wenrich who suggested to Dr. Ruth Patrick of the Academy of Natural Sciences that I was qualified to fill the position of protozoologist on one of the two limnological research teams being assembled to begin operations in June 1948 under the direction of Dr. Patrick.

Item 2: The two teams were to study the effects of pollution on the aquatic communities of the Conestoga River Basin and its tributaries and, to a much lesser extent, Brandywine Creek, both in Pennsylvania. My most vivid recollection of that experience is the zest and enthusiasm of both teams and their leader for the research we were doing. Research teams were not common in that era of "lone wolf" research. Those memories persist to this day. Although I recall no formal discussion about it, Ruth Patrick became my career mentor at that time. She educated me on some very important points: (1) scientific research, if well designed, could have both theoretical and practical merit, (2) natural systems could be used perpetually if they were not abused, (3) large systems could be effectively studied by teams if information flow was incorporated into the research design at the outset, (4) individual research investigators could both retain their academic identity and contribute to a team effort if the project were designed to permit this, and (5) one's research may not get recognition for 10-30 years.

One of the major benefits of a scientific education is the training to examine evidence dispassionately, to see if the source is identified, and to see if the individual making claims had the credentials to do so. Vedantam (2007) analyses the psychological studies that highlight the potential paradox in trying to fight bad information with good information. As early as 1945, psychologists Floyd Allport and Milton Lepkin found that the more often people heard false wartime rumors, the more likely they were to believe them. Worse yet, Kimberlee Weaver demonstrated that hearing the same thing over and over again from one source can have the same effect as hearing the same thing from many different people. Vedantam (2007) discusses Norbert Schwarz's study of volunteers who read the U. S. Center for Disease Control flyer to combat the myths about the flu vaccine. It cited various commonly held views and labeled them "true" or "false." Schwarz found that within 30 minutes older people misremembered 28 percent of the false statements as true. Three days later they remembered 40 percent of the myths as factual. Younger people did better at first, but three days later they made as many errors as older people did after 30 minutes. The most troubling finding was that people of all ages now felt that the source of

their false beliefs (which they believed were true) was the respected Center for Disease Control. One hopes that a sound education, both formal and informal, would reduce deadly errors of this type.

Most of my informal education came from my companion Jeannie. She was always attracted to the beauty of natural systems and saw that we lived in them without stressing them for most of our lives. Whenever possible we spent an hour or more in them daily. She did not believe in having many material possessions but was strongly attached to some of the ones we had, such as her grandfather's sea chests and the knickknack wall fixture hand carved by her father that holds a small statue of an elderly woman sitting in a meditative posture and other small items. Her joy in folk dancing, hiking, concerts, plays, and a wide variety of books was contagious and the world is not the same now that she is gone. But 63 years of companionship have had a lasting effect and how she saw the world still strongly influences me. On our walks Jeannie would make sure I noticed the small white flower at our feet or the little pile of owl scat near the path. Jeannie educated me in the joys of simple living.

Literature Cited

Hargittai, I. 2006. Interview with Alexander Varshavsky, pp. 311-359 in *Candid Science*.

Vedantam, S. 2007. Persistence of myths could alter public policy approach. *Washington Post Online*, September 4 A03.